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EXAMINER

UHLIR, NIKOLAS J

ART UNIT

PAPER NUMBER

1773

DATE MAILED: 06/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/740,345

Applicant(s)

MUKAIDA, MINORU

Examiner

Nikolas J. Uhler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 28-47 is/are pending in the application.
- 4a) Of the above claim(s) 39-47 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 28-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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**DETAILED ACTION**

1. This office action is in response to the amendment/arguments dated 05/14/2004. Applicant's amendment is sufficient to overcome the previous rejection of claims 28-30, 34-38 under 35 U.S.C. 102/103 as anticipated by, or in the alternative, unpatentable over, Yoshimura et al. (US5906885). However, applicant's amendment is not sufficient to overcome the previous rejection of claims 28-38 under 35 U.S.C 103 as unpatentable over Craven in view of The Encyclopedia of Polymer Science, Vol. 3, November 1985, pg. 552. Currently, claims 28-47 are pending, with claims 39-47 withdrawn from consideration.

***Claim Rejections - 35 USC § 103***

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 28-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craven (US3878147) in view of The Encyclopedia of Polymer Science, Vol. 3, November 1985, pg. 552.

4. It is noted that a copy of both of the above cited references accompanied a prior office action and so are not included with this office action.

5. Claim 28 requires an article with improved energy consumption efficiency, comprising a contact surface and a film formed thereon, the film having a thickness of 0.01-10 $\mu$ m and a viscosity of 100,000cp or less, the film comprising an antislipping agent consisting of fine particles of an average particle diameter of 10 $\mu$ m or less, the film comprising a polymer binder selected from the group consisting of polyethylene; a

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methyl, phenyl, chloro, hydroxy, acetoxy, or cyano derivative of polyethylene; polybutadiene; a methyl or chloro derivative of polybutadiene; a copolymer of said polyethylene derivative and said butadiene derivative; silicone; polysulfide; polyurethane; modified silicone; modified epoxy; and modified acrylic, wherein the article is a rubber tire or shoe sole.

6. Regarding these limitations, Craven teaches a composition that is used to increase the friction of surfaces on ice, particularly the surfaces of automobile and truck tires (column 1, lines 5-8). The composition is a mixture of a binder and fine particles that possesses excellent adherence to rubber substrates and provides a high level of friction on icy roads (column 1, lines 21-25). The composition comprises 5-25% by weight of a soluble elastomer, 43-92.99% by weight of a solvent for the elastomer, and 2-20% by weight of dispersed inorganic particles having a particle size of about .2-105  $\mu\text{m}$ . Craven teaches that suitable elastomers for the coating composition include polyurethane, as well as a number of other elastomers.

7. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to select polyurethane as the flexible polymeric binder, as polyurethane is taught by Craven to be equivalent to the other binders listed.

8. Regarding the applicant requirement that the article with improved energy consumption efficiency comprise an antislipping agent consisting of fine particles of an average diameter of 10 $\mu\text{m}$  or less. The examiner notes that the claim language utilized by the applicant renders the claim open to containing particles of antislipping agent that are greater than 10 $\mu\text{m}$ . Specifically, the applicant requires the article with improved

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energy consumption efficiency to *comprise an* antislipping agent *consisting of* particles having an average diameter  $\leq 10\mu\text{m}$ . By only requiring that the article *comprise an* antislipping agent *consisting of* particles having a diameter  $\leq 10\mu$ , the applicant merely requires that some of the antislipping particles to have the required particle diameter.

9. Bearing this interpretation in mind, Craven teaches the addition of particles having an average diameter in the range of about  $0.2\text{--}105\mu$ . As about  $0.2\mu$  is completely encompassed by the applicants claimed range, at least some of the antislipping particles in craven will have the average diameter required by claim 28.

10. Regarding applicants required viscosity limitation. Craven does not specifically teach this requirement. However, it is noted that Craven does teach the application of the coating via various methods, including brushing, dipping, spraying etc... (column 2, lines 63-68).

11. Further, The Encyclopedia of Polymer Science, Vol. 3, November 1985, pg. 552 teaches common coating methods and the viscosity range of compounds that are coated utilizing those methods. From this disclosure, the examiner takes the position that the viscosity of the coating is a results effective variable. It would have been obvious to one with ordinary skill in the art to optimize the viscosity of the coating of Craven to meet the requirements of the coating method to be utilized.

12. Regarding the applicants claimed thickness requirement. The examiner notes that Craven teaches that the thickness of the film is "about 0.5 mils." It is the examiners position that "about .5 mils" encompasses .4 mils, which is equivalent to applicants claimed  $10\mu$ . Thus, Craven meets this limitation. However, should applicant traverse

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this argument, it is noted that Craven teaches that a film that is 1-2 mils thick will typically remain on the tire for 5-10 miles, depending on road conditions (column 3, lines 13-15). Thus the thickness of the film is a result effective variable, with a thinner film remaining on the tire for shorter distances, and vice versa.

13. Therefore it would have been obvious to one with ordinary skill in the art at the time the invention was made to control the thickness of the Craven film to suit the distance to be traveled. Shorter distances would require a thinner coating, thereby conserving material.

14. Further, should applicant traverse this argument, the examiner notes once again that Craven teaches that a film having a thickness of 1-2mils will remain on the tire for ~5-10 miles. This clearly implies that as the vehicle is driven, the coating on the tires wears down. Thus, due to this wear, at some point the coating taught by Craven will have a thickness within the applicants claimed range. Further, assuming a balanced and aligned tire, as the tire is rotated the coating will wear evenly. Thus, the average thickness of the craven coating will at some point be within the applicants claimed range. This is true even if the coating does not wear down per se but rather portions of the coating flake off the tire, resulting in a coating having a "Swiss cheese" appearance. Even should portions of the coating flake off, the average thickness of the coating will eventually decrease to within the applicants claimed range.

15. Claim 29 requires at least a portion of the particles of antislipping agent to be partially exposed throughout a surface of the film. It is noted that applicants claim language, i.e. "at least some", only requires 1 or more particles to be exposed at the

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surface of the film. It is acknowledged that Craven does not explicitly teach this limitation. However, as set forth above for claim 28, the coating of Craven clearly wears down as the vehicle is driven. Thus, at some point the particles embedded in the coating of Craven will be exposed at the surface of the film as the film wears down.

16. Claim 30 requires the antislipping agent to comprise silicon oxide, aluminum oxide, cerium oxide, silicon carbide, or a fine particulate organic material. Craven teaches that a suitable material for the particulate material include aluminum oxide, silica (synonymous with silicon oxide), silicon carbide, and other inorganic particles (column 2, lines 8-22).

17. Claims 31-33 further limit the viscosity range of the coating. The examiner maintains that it would be obvious to alter the viscosity of the coating to enable a desired coating method to be utilized, as set forth above.

18. Claims 34-35 further limit the thickness of the film. The examiner maintains that due to the clear implication in Craven that the coating wears down over time, at some point the coating of Craven will have a thickness within the applicants claimed range.

19. Claim 36 and 27 are met as set forth above for claim 28.

20. Claims 38 requires the particles to have a diameter in the range of 10-100nm. The examiner notes that Craven teaches that the particles have a suitable particle size of "about" 0.2-105 $\mu$ . As "about" 0.2 $\mu$  encompasses 0.1 $\mu$  (equivalent to 100nm), the limitations of claim 38 are met.

### ***Response to Arguments***

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21. Applicant's arguments filed 5/14/2004 have been fully considered but they are not persuasive. The applicant again relies on an argument of unexpected results with respect to the claimed thickness. Specifically, applicant's argue that they have observed that the coating of the instant invention is more strongly adhered to a rubber substrate, i.e. a shoe sole or rubber tire as the thickness of the coating decreases. The applicant relies on the data in the specification to support this argument.

22. The examiner acknowledges that in a previous response the examiner believed that the applicant was relying on the data in figure 3 of the instant specification to establish their argument of unexpected results. However, applicants never before pointed out that they were relying on any data to support their argument of unexpected results. In this response, applicant asserts that they rely on the data in the specification to support their argument. The examiner has carefully reexamined all of the data presented in the specification and can find nothing that establishes the criticality of the thickness of the layer to the applicants argument of improved adhesion. Figure 3, which the examiner previously thought related to the applicants adhesion argument contains data with respect to the frictional coefficient of a tire with a driving surface (i.e. a road). Thus, the data presented has to do with the adhesion of the tire surface to the road surface. The applicants argument of unexpected results however, relates to the adhesion of the coating to the tire surface. Further, even if figure 3 presented data representing the adhesion of the coating to the tire (which it does not), there is no conclusive data presented that establishes that coating having a thickness  $>10\mu$  have

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reduced adhesion to the tire surface with respect to coatings having a thickness of  $\leq 10\mu$ .

23. The examiner does note that the specification does discuss the role of coating thickness and adhesion at page 11, lines 5+. However, this discussion merely makes the same general argument presented by the applicant in the response, and provides no data conclusively establishing the criticality of the claimed coating thickness. As there is no data supporting the unexpected results asserted by the applicant, this argument is unpersuasive.

24. Applicants also argue against the examiners interpretation of the phrase "comprise an antislipping agent consisting of fine particles having an average diameter of  $10\mu\text{m}$  or less." The term "comprising" is open language, which allows for other components to be present in the coating, i.e. more than one antislipping agent. By reciting "comprising an antislipping agent," with a required particle size, the claim merely requires one ("an" is singular, i.e. one) antislipping agent of the potentially infinite number of antislipping agents that could be contained in the coating to have the required particle size. The examiner previously suggested using the language "wherein the film contains antislipping agents, wherein the antislipping agents consist of fine particles having a diameter  $\leq 10\mu$ ." This language is narrower than the current claim language in that it specifically requires all of the antislipping agents to have an average diameter of less than  $10\mu$ . The issue is not the use of the term "containing" as opposed to "comprising." Rather, it is the use of the phrase "the antislipping agents" as opposed to "an antislipping agent." The language, "comprises/contains an antislipping agent with

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a particle size  $\leq 10\mu$ " means that the composition must contain one antislipping agent having the required particle size, but that it could contain other antislipping agents having larger size particles. This contrasts with the language, "comprises/contains antislipping agents, wherein the antislipping agents have a particle size  $\leq 10\mu$ ," which specifically requires all antislipping agents in the composition to have a particle size in the claimed range.

25. For the reasons set forth above, all of the applicant's arguments are unpersuasive.

### ***Conclusion***

26. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikolas J. Uhlir whose telephone number is 571-272-1517. The examiner can normally be reached on Mon-Fri 7:30 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul J. Thibodeau can be reached on 571-272-1516. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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